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IS 13147 (1991): Black Oxide Coating on Stainless Steel Parts [MTD 7: Light Metals and their Alloys]

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Indian Standard

BLACK OXIDE COATING ON STAINLESS STEEL PARTS — SPECIFICATION

UDC 621·794·61 : 669·14·018·8

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 1991 **Price Group 1**

Metallic and Non-Metallic Finishes Sectional Committee, MTD 20

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Metallic and Non-Metallic Finishes Sectional Committee had been approved by the Metallurgical Engineering Division Council.

The black oxide coating is intended to be used for providing black surface on stainless steel parts that cannot tolerate any dimensional build-up. It is also used for decorative purposes and to reduce the light reflection from the parts.

In laying down this standard, due weightage has been given to practices prevailing in this country in addition to relating it to international co-ordination among standards and practices prevailing in different countries.

In the preparation of this standard assistance has been derived from MIL-C-13924 B, US Military specification.

Indian Standard

BLACK OXIDE COATING ON STAINLESS STEEL PARTS — SPECIFICATION

1 SCOPE

1.1 This standard specifies the requirements for the black oxide coating on stainless steel parts.

2 REFERENCES

2.1 The following Indian standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
9844 : 1981	Method of testing corrosion resistance of electroplated and anodized aluminium coatings by neutral salt spray test
11826 : 1986	Recommended practice for chemical colouring for engineering components in general and for bicycle components

3 GENERAL REQUIREMENTS

3.1 The stainless steel parts may, as far as practicable, be coated in accordance with IS 11826 : 1986.

4 COATING REQUIREMENTS

4.1 Freedom from Defects

The coating shall be uniform in colour with glossy black to dull black appearance depending on the condition of the basis metal and it shall cover the basis metal completely without any voids or breaks.

4.2 Visual Tests

Processed parts are inspected visually under strong light. The coating shall show no indication of any reddish brown and green smut.

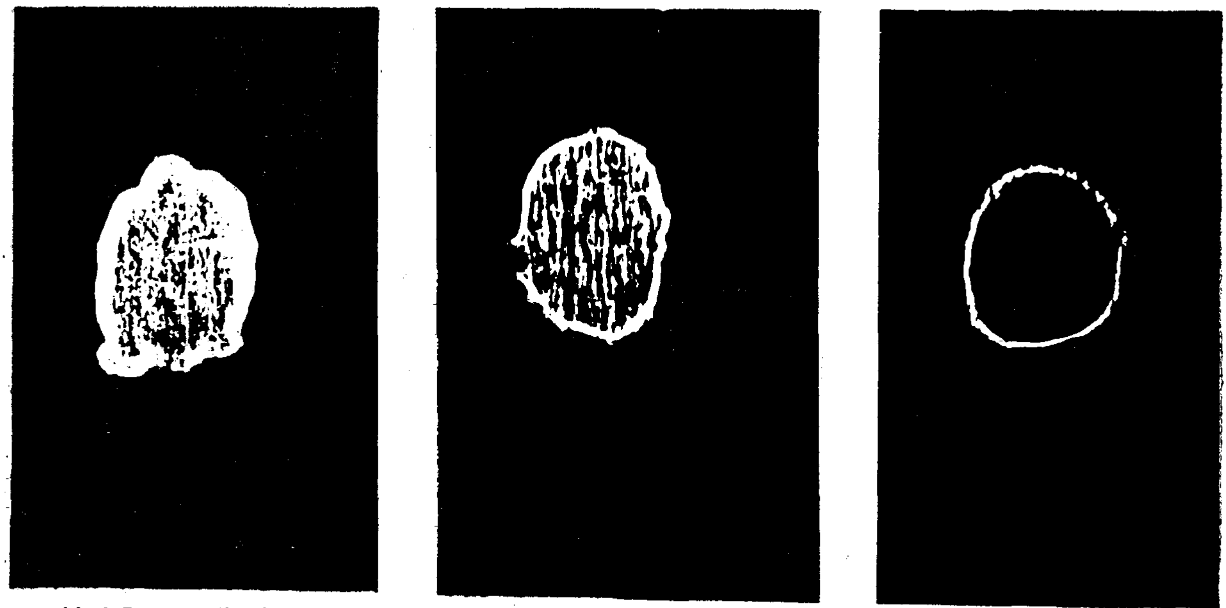
4.3 Corrosion Test

Processed parts are washed in distilled water, dried with a soft cloth and then subjected to 5 percent salt-spray for a period of 96 hours. When tested in accordance with IS 9844 : 1981. At the end of the test, parts shall show no signs of basis metal corrosion.

4.4 Quality of Oxide Coating (Oxalic Acid Test)

Place three drops of 5 percent by volume oxalic acid solution on the part under test and the reaction shall be observed for a period of 8 minutes. Then the part is washed with water and compared to Fig. 1 for acceptance.

A light grey centre with light border colour as in Fig. 1A indicates poor quality coating. A grey black centre with a light border as in Fig. 1B indicates a border line quality coating. A black or dark brown centre with a light border indicates a good quality coating as in Fig. 1C.



1A A Poor Quality Coating 1B A Borderline Quality Coating 1C A Good Quality Coating

FIG. 1 ASSESSMENT OF QUALITY OF BLACK OXIDE COATINGS

5 SAMPLING

5.1 Sampling for Production Control

Statistical quality control is recommended for controlling the quality of chemical colouring of components. For this purpose, it is recommended that the articles that are coloured shall be taken from a place in the bath which is likely to give light shade and subjected to the test specified in **4.2**, **4.3** and **4.4**.

5.2 Sampling for Acceptance of a Lot

For the purpose of this sampling, a lot shall be divided into sub-lots consisting of 100 articles or part thereof of any such articles, as are coloured at one time in the same bath. Two samples shall be selected from each sub-lot and subjected to the tests specified in **4.2**, **4.3** and **4.4**.

5.3 Criteria of Acceptance

If these samples pass the tests, the sub-lot represented by them shall be accepted. If one or both the samples should fail, two further samples shall be selected from the same sub-lot and subjected to the tests. If both these samples pass the tests, the sub-lot shall be considered as conforming to the standard. If either of them fails in any of the tests, the sub-lot shall be rejected.

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